and $\dot{V}_{s/polyol}$ for the polyol and predetermined pressure $p_{s/iso}$ for the isocyanate and $p_{s/polyol}$ for the polyol. The isocyanate and polyol are then mixed in the mixing chamber to form a polyurethane reaction mixture and the polyurethane reaction mixture is discharged into a mold. In this process, prior to conveyance of the polyol and isocyanate components in shot operation, (1) the isocyanate and polyol are conveyed in circuit through circulation lines between the mixing chamber and their respective storage vessels, (2) the pressure of the isocyanate and of the polyol are measured by means of pressure sensors and transmitted to a control device, (3) the volumetric flow-rates of the isocyanate and polyol are adjusted while being conveyed through the circulation lines in such a way that the pressure of each of the isocyanate and polyol in the circuit corresponds to the predetermined pressures $p_{s/iso}$ and $p_{s/polyol}$ of the components for shot operation, and (4) the volumetric flow-rates $\dot{V}_{s/iso}$ and $\dot{V}_{s/polyol}$ of the isocyanate and polyol are adjusted by the control device during change-over from circulatory mode of operation to shot operation by adjustment of drive units of metering elements for the isocyanate and polyol.

A key feature of the process of the present invention is the adjustment of the volumetric flow rates of the isocyanate and polyol streams during change-over from circulatory mode of operation to shot operation. This adjustment of flow rates results in maintenance of a constant pressure throughout the system during both the circulation mode and the shot operation (Compare Figures 3 and 4) and thereby avoids distortion of the mixing ratio of isocyanate and polyol.

I. Claims 1 and 4-7 stand rejected under 35 U.S.C. §102(b) as being anticipated by Soechtig (U.S. Patent 4,944,599). Applicants continue to respectfully traverse this rejection.

Soechtig discloses an impingement mixing device in which constant pressure and flow volume is achieved by continuous closed feedback loop monitoring of the pressure and flow volume to effect a change in an adjustable pump setting and **servo displaceable nozzle needle.**

Soechtig does **not** teach or suggest the adjustment of volumetric flow rates while being conveyed through the circulation lines to the volumetric flow rate during the changeover from circulation to shot operation as is required in Applicants' claimed invention. Rather, Soechtig teaches adjustment of the nozzle needle during the shot operation - not in circulation lines prior to shot operation.

It is stated in the Office Action that Soechtig teaches adjustment of the volumetric flow rates of the isocyanate and polyol while being conveyed through the circulation lines in such a way that the pressure of each of the isocyanate and polyol in the circuit corresponds to the predetermined pressures of the components for shot operation at column 7, lines 5-15 and 26-30.

Applicants respectfully disagree.

At column 7, lines 5-15, Soechtig states:

> A flow meter **28** is also connected in the circulation loop prior to the mixing head. The control block **30** is connected in a closed loop. The control block monitors the pressure transducer **27** and the incremental transmitter **23** in order to actuate the servo-motor **14 to control the nozzle position**. In a similar fashion the control block also monitors flow meter **28** and the linear potentiometer **26** in order to actuate the servo valve **25** to adjust the setting piston **24** thereby setting the pump **9**. (emphasis added)

It is the control of the nozzle position by which the appropriate pressure is maintained in the Soechtig method. (See column 1, lines 54-58 of Soechtig.)

Soechtig does **not** teach or suggest that adjustment of the flow rate of the reaction components could or should be used to maintain a constant pressure. In fact, Soechtig teaches the opposite at column 1, line 65-column 2, line 4 where it is stated:

> The interaction between volume and pressure of each component further enables changing the component mixing ratio by affecting the pressure of only a single component or by modification of the component pressure of each component independent of the component pressure of the other components. Changing the component mixing ratio will effect the characteristics of the product produced.

Applicants further maintain that the teachings of Soechtig at column 7, lines 26-30 do not support the rejection of their claims because this cited portion of the reference does not teach or suggest that adjustment of the flow volume of reactants could or should be used to maintain a constant pressure during the circulation and shot modes of operation.

In short, Soechtig controls pressure by adjustment of the nozzle needle. Soechtig does not teach or suggest a key feature of Applicant's claimed invention, i.e., the maintenance of constant pressure by volume control. Soechtig does not therefore teach or suggest Applicants' claimed invention and does not therefore support the rejection of Applicants' claimed invention under 35 U.S.C. §102(b).

Withdrawal of this rejection is therefore requested.

II. Claims 2 and 3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Brown (U.S. Patent 5,240,969). Applicants continue to traverse this rejection.

Brown discloses low density reinforced reaction injection molded parts. Brown does not teach or suggest anything with respect to maintaining a constant volumetric flow rate during shot operation in the process used to make such parts.

The teachings of Brown can not therefore be construed in any manner which would lead one skilled in the art to Applicants' claimed process in which the volumetric flow rates of the isocyanate and polyol components are adjusted while being conveyed through the circulation lines to make them correspond to the volumetric flow rate during shot operation.

Applicants' claimed invention is not therefore rendered obvious by the teachings of Brown.

It was stated in the Office Action that Applicants' arguments are not persuasive because Brown was not cited to show maintaining a constant volumetric flow rate during shot operation.

Applicants would first point out that their invention is directed to the maintenance of constant pressure by control of volumetric flow rate.

Applicants would further point out that Claims 2 and 3 depend from Claim 1 which does require control of volumetric flow rate to maintain constant pressure. The fact that Brown does not teach this feature of the claimed invention is therefore significant, particularly in view of the fact that Brown is the only reference cited as support for this rejection.

Applicants would also note that the combinability of Brown with Soechtig is discussed in the Office Action with respect to this rejection but that Soechtig was not actually included in the statement of the rejection.

In an effort to expedite the prosecution of this case, Applicants will address the combined teachings of Soechtig and Brown.

As has already been discussed with respect to the rejection of Claims 1 and 4-7 under 35 U.S.C. §102(b), Soechtig teaches a completely different method for controlling pressure than that used in Applicant's claimed invention. Combination of the teachings of Soechtig with those of Brown (which teaches nothing with respect to maintenance of constant pressure) would not therefore suggest Applicants' claimed invention to one skilled in the art reading those disclosures at the time Applicants made their invention.

Withdrawal of this rejection is therefore requested.

In view of the above remarks, reconsideration and allowance of Claims 1-7 are respectfully requested.

Respectfully submitted,

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